

A FLORISTIC STUDY OF DELTA MEADOWS RIVER PARK, SACRAMENTO COUNTY, CALIFORNIA

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ABSTRACT

A species list of 165 vascular plants was compiled for a 57 hectare park in the Sacramento River Delta. The park supports extensive, relatively undisturbed freshwater marsh habitat. Forty-four taxa occur in freshwater marsh, only 20% (9) of which are introduced. Overall, fifty percent of the taxa observed in the park are non-native, with the majority occurring in ruderal areas and annual grasslands.

Delta Meadows River Park is situated on the Sacramento River Delta east of the Sacramento River. Sacramento is located approximately 40 km north. The small town of Locke is immediately west of the park's southern portion. The 57 hectare park is composed primarily of the abandoned Southern Pacific Railroad right-of-way between Twin Cities Road and the Delta Cross Channel, just south of Locke (California Department of Parks and Recreation 1990). Snodgrass Slough defines the western boundary in the northern portion of the park. Construction of levees, on which the railroad was situated, disrupted the natural landscape. However, the park is interesting botanically because, in its northern portion, it includes a small island and portions of two peninsulas. Large portions of these areas are tidally inundated. As a result, they support extensive and relatively undisturbed freshwater marsh with strips of riparian habitat. Delta Meadows River Park is operated by the California Department of Parks and Recreation. People use the park for fishing, boating, picnicking, and swimming.

A total of 165 vascular plant species were documented within Delta Meadows River Park, 50% of which are native. Three rare plant species occur in the park's freshwater marshes: *Hibiscus lasiocarpus*, *Lathyrus jepsonii* ssp. *jepsonii*, and *Lilaeopsis masonii*. Displacement of native plant taxa has occurred in non-marsh habitat and continues due to the invasion of non-natives including *Rubus discolor*, *Centaurea solstitialis*, and *Phyla nodiflora*. These species are particularly problematic in the riparian forests and ruderal habitats within the park. *Sambucus mexicana*, host plant of the threatened *Desmocerus californicus dimorphus* (valley elderberry long-horn beetle), occurs in the park primarily along the northern levee road in the riparian forest vegetation. The vegetation patterns in the

park are correlated with hydrologic conditions. The freshwater marshes in the park are a rare ecological asset due to their relatively undisturbed nature, their native species richness, and the significant statewide loss of this habitat.

VEGETATION

Four vegetation types occur in Delta Meadows River Park: freshwater marsh, willow scrub, valley oak riparian forest, and annual grassland. The inter-tidal zone (below the mean high tideline and above the mean low tideline) supports freshwater marsh on saturated soils. The vegetation immediately adjacent to this zone on the upland side is predominantly willow scrub. The soil generally appears to be moist but not saturated. Valley oak riparian forest is established on higher ground with soils that dry out at the surface but have a ground water table generally within 1.5 to 5.5 meters. The annual grassland occurs on upland sites that were disturbed by human activity, such as agriculture and levee construction prior to state acquisition.

The zonation pattern described above is not as pronounced on levee slopes. The construction of levees in the northeast and southwest portions of the park significantly reduced the habitat available for freshwater marsh and willow scrub vegetation. These slopes are steep from top to toe. Elimination of a gradual slope altered the hydrology such that saturated soil and moist soil conditions are minimal. On levee slopes, the valley oak riparian forest often grows to the edge of the waterways. Occasionally a narrow ribbon of tules and other freshwater marsh plants establish along the water's edge at levee bases.

Although open water and ruderal habitats do not support a particular vegetation type, they support a distinctive flora. Open water adjacent to marshes supports a variety of emergent and floating aquatic plants. *Ludwigia peploides*, with its showy yellow flowers, is commonly found in the open water habitat. *Eichhornia crassipes*, also found within this habitat, is an invasive species ultimately capable of obstructing boat traffic in waterways. The ruderal habitat is found along dirt roads. Typical ruderal plants include *Foeniculum vulgare*, *Centaurea solstitialis*, and *Rubus discolor*. The majority of the non-native taxa in the park occur within the ruderal habitat (Table 1). Itemized in Table 1 are the percentages of non-native taxa represented in each of the park's habitats, including the vegetation types.

Freshwater marsh. The freshwater marsh is dominated by *Scirpus acutus* commonly in association with *Typha* spp., *Polygonum hydropiperoides*, *Verbena* spp., *Lycopus americanus*, *Ludwigia peploides*, *Sagittaria latifolia*, *Cyperus* spp., and *Juncus* spp. The three

TABLE 1. PERCENT NON-NATIVE TAXA BY HABITAT.

Habitat	Total number of taxa (a)	Percent of non-native taxa
Annual grassland (b)	23	74%
Freshwater marsh	45	20%
Open water	8	50%
Ruderal	59	81%
Valley oak riparian forest	40	33%
Willow scrub	10	20%

Notes: (a) Some taxa occur in more than one habitat.

(b) Includes taxa in the fallow agricultural field.

rare plant species occur in this habitat. The native species diversity of the marshes in the park is high, probably because the tidally inundated island and peninsulas they dominate are relatively undisturbed.

Willow scrub. The willow scrub is dominated by *Salix lasiolepis*, *S. exigua*, and *S. laevigata*. Common shrub associates include *Cephalanthus occidentalis* var. *californicus* and *Cornus sericea* ssp. *sericea*.

Valley oak riparian forest. The valley oak riparian forests within the park, although well developed, are second growth primarily on the banks of levees. *Quercus lobata* dominates the forest and is associated with several other native trees: *Q. agrifolia*, *Fraxinus latifolia*, *Juglans californica* var. *hindsii*, *Alnus rhombifolia*, *Populus fremontii*, and *Salix gooddingii*. Two other native trees are found in the valley oak riparian forest but they are uncommon within the park: *Aesculus californica* and *Platanus racemosa*. Common understory species include *Rosa californica*, *Toxicodendron diversilobum*, *Vitis californica*, *Phyla nodiflora*, *Rubus ursinus*, and *R. discolor*. *R. discolor* is an invasive, non-native which forms large mounds that exclude other plants. *Phyla nodiflora* is an invasive, non-native ground cover. *Sambucus mexicana* also occurs within this vegetation type, primarily along the levee road south of Twin Cities Road. Riparian forest is being restored at the south end of the park in an area just north of the Delta Cross Channel which was formerly under cultivation (Kerbavez personal communication).

Annual grassland. The annual grasslands are dominated by introduced grasses including *Avena barbata*, *Bromus diandrus*, *B. hordeaceus*, and the perennial *Cynodon dactylon*. A native perennial grass, *Leymus triticoides*, often occurs along the border of grasslands in the ecotone with valley oak riparian forest.

FLORA

Floristic surveys were conducted in 1992, 1993, 1994, and 1995; spring, summer, and fall trips were made. The park was surveyed on foot and by canoe. Voucher specimens are housed in the John M. Tucker Herbarium at the University of California (DAV). Voucher specimens were collected for 93% of the taxa represented in this floristic study. Vouchers were collected by the author unless otherwise noted. Nomenclature follows Hickman 1993. Common names were gleaned from several sources: Abrams 1940, 1944, and 1951, Abrams and Ferris 1960, Hickman 1993, Munz 1973, and Mason 1957. A total of 165 vascular plants were documented within Delta Meadows River Park, 50% of which are native. Fifty-eight families are represented in the flora. Further floristic work in the park will no doubt add species to the list; however, the majority are represented in this publication.

PTERIDOPHYTA

Azollaceae

Azolla filiculoides Lam. Mosquito fern. Open water and freshwater marsh. Uncommon. [1701]

Equisetaceae

Equisetum hyemale L. ssp. *affine* (Engelm.) Calder & R. H. Taylor. Common scouring rush. Uncommon. Small patch growing near southern park entrance along the road. [1726]

ANTHOPHYTA-DICOTYLEDONEAE

Aceraceae

Acer negundo L. var. *californicum* (Torrey & A. Gray) Sarg. Box elder. Valley oak riparian forest. Occasional.

Amaranthaceae

**Amaranthus albus* L. Tumble pigweed. Native to tropical America. Ruderal. Uncommon. [1733]

**Amaranthus retroflexus* L. Redroot pigweed. Native to tropical America. Ruderal. Uncommon. [1732]

Anacardiaceae

Toxicodendron diversilobum (T. & G.) Greene. Poison-oak. Valley oak riparian forest. Common.

Apiaceae

- Cicuta maculata* L. var. *bolanderi* (S. Watson) Mulligan. Water hemlock. Freshwater marsh. Uncommon. [1684]
 **Foeniculum vulgare* Mill. Sweet fennel. From Europe. Ruderal. Common. [Hrusa & Wagner 9199]
Hydrocotyle verticillata Thunb. Whorled marsh-pennywort. Freshwater marsh. Occasional. [1672]
Lilaeopsis masonii Matthias & Constance. Mason's lilaeopsis. Freshwater marsh. Rare.

Apocynaceae

- Apocynum cannabinum* L. Indian hemp. Valley oak riparian forest. Occasional. [1622]
 **Vinca major* L. Periwinkle. From Europe. Valley oak riparian forest. Occasional.

Asteraceae

- Ambrosia psilostachya* DC. Western ragweed. Ruderal. Common. [1638]
Artemisia douglasiana Besser. Mugwort. Valley oak riparian forest. Occasional. [1652]
Aster lanceolatus Willd. ssp. *hesperius* (A. Gray) Semple & J. Chmielewski. Marsh aster. Annual grassland/valley oak riparian forest ecotone. Uncommon. [1720]
Baccharis pilularis DC. Coyote brush. Fallow agricultural field. Uncommon. [1717]
 **Centaurea solstitialis* L. Yellowstar thistle. From Europe. Annual grassland and ruderal. Abundant.
 **Chamomilla suaveolens* (Pursh) Rydb. Pineapple weed. From nw N. America and ne Asia. Ruderal. Uncommon. [1736]
 **Cirsium vulgare* (Savi) Ten. Bull thistle. From Europe. Valley oak riparian forest. Occasional. [1657]
 **Cichorium intybus* L. Chicory. Native to Europe. Ruderal. Uncommon. [Hrusa & Wagner 9200]
Euthamia occidentalis Nutt. Western goldenrod. Ruderal. Uncommon. [1734]
Grindelia camporum E. Greene var. *camporum*. Gumweed. Ruderal. Uncommon. [1642]
Hemizonia pungens (Hook. & Arn.) Torrey & A. Gray. Common spikeweed. Ruderal. Uncommon. [Hrusa & Wagner 9208]
Heterotheca grandiflora Nutt. Telegraph weed. Ruderal. Common. [1725]
 **Lactuca serriola* L. Prickly lettuce. From the Mediterranean. Ruderal. Common. [1601]

- **Picris echioides* L. Bristly ox-tongue. Native to Europe. Ruderal. Occasional. [1676, 1718]
- **Senecio vulgaris* L. Groundsel. Native to Eurasia. Willow scrub. Uncommon. [1708]
- **Silybum marianum* (L.) Gaertn. Milk thistle. From Mediterranean region. Ruderal. Occasional.
- **Sonchus oleraceus* L. Common sow thistle. From Europe. Valley oak riparian forest. Occasional. [1655]
- **Taraxacum officinale* Wiggers. Dandelion. From Europe. Valley oak riparian forest. Uncommon. [Hrusa & Wagner 9127]
- **Tragopogon porrifolius* L. Salsify. Native to Europe. Ruderal. Uncommon. [1607]

Betulaceae

- Alnus rhombifolia* Nutt. White alder. Valley oak riparian forest. Common. [1614]

Brassicaceae

- **Brassica cf. rapa* L. Field mustard. Native to Europe. Ruderal. Occasional. [Hrusa & Wagner 9116]
- **Capsella bursa-pastoris* (L.) Medikus. Native to Europe. Ruderal. Uncommon. [1743]
- **Hirschfeldia incana* (L.) Lagr.-Fossat. Mediterranean mustard. Native to Mediterranean. Ruderal. Occasional. [1600]
- Lepidium strictum* (S. Watson) Rattan. Peppergrass. Ruderal. Uncommon. [1742]
- Rorippa palustris* (L.) Besser var. *occidentalis* (S. Watson) Rollins Marsh yellow-cress. Freshwater marsh and willow scrub. Occasional. [1705]

Caprifoliaceae

- Sambucus mexicana* C. Presl. Blue elderberry. Valley oak riparian forest. Common.

Caryophyllaceae

- **Spergularia rubra* (L.) J. S. Presl & C. Presl. Purple sand spurry. From Europe. Ruderal. Occasional. [1643]
- **Stellaria media* (L.) Villars. Common chickweed. Native to sw Europe. Annual grassland. Common. [Hrusa & Wagner 9108]

Chenopodiaceae

- **Chenopodium ambrosioides* L. Mexican tea. From tropical America. Ruderal. Uncommon. [1639]

Convolvulaceae

- Calystegia sepium* (L.) R. Br. ssp. *limnophila* (E. Greene) Brummitt.
Hedge bindweed. Freshwater marsh. Occasional. [1663]
**Convolvulus arvensis* L. Bindweed. From Eurasia. Ruderal. Occasional. [Hrusa & Wagner 9207]

Cornaceae

- Cornus sericea* L. ssp. *sericea* Creek dogwood. Freshwater marsh, valley oak riparian forest, and willow scrub. Common. [1624]

Crassulaceae

- Crassula connata* (Ruiz Lopez and Pavon) A. Berger. Annual grassland. Uncommon. [Hrusa & Wagner 9130]
**Crassula tillaea* Lester-Garl. Native to Mediterranean. Ruderal. Uncommon. [1735]

Fabaceae

- Glycyrrhiza lepidota* Pursh. Wild licorice. Ruderal. Uncommon. [1636]
Lathyrus jepsonii E. Greene var. *jepsonii*. Delta tule pea. Freshwater marsh. Rare. [1632, 2048]
**Lotus corniculatus* L. Bird's foot trefoil. Native to Eurasia. Ruderal. Occasional. [1644]
Lotus purshianus (Benth.) Clements & E.G. Clements var. *purshianus* Spanish clover. Ruderal. Common. [1640a]
**Medicago polymorpha* L. Bur-clover. From southern Europe. Ruderal. Common. [1738, 1745]
**Medicago sativa* L. Alfalfa. From Eurasia. Fallow agricultural field. Uncommon. [1714]
**Melilotus indica* (L.) All. Sourclover. From Mediterranean. Valley oak riparian forest. Occasional. [1628]
**Trifolium* sp. Clover. Ruderal. Occasional. [Hrusa & Wagner 9209]
**Vicia sativa* L. ssp. *sativa* Common vetch. Native to Europe. Annual grassland and ruderal. Occasional. [1599, 1740]
**Vicia villosa* Roth ssp. *villosa*. Native to Europe. Annual grassland and ruderal. Common. [1747]

Fagaceae

- Quercus agrifolia* Neé var. *agrifolia*. Coast live oak. Valley oak riparian forest. Common. [1610, 1646]
Quercus lobata Neé. Valley oak. Dominant tree of the riparian forest in the park. [1658]

Gentianaceae

Centaurium muehlenbergii (Griseb.) Piper. Centaury. Willow scrub along water's edge. Uncommon. [1625]

Geraniaceae

**Erodium botrys* (Cav.) Bertol. Long-beaked filaree. Native to southern Europe. Ruderal. Common. [1641]

**Erodium brachycarpum* (Godron) Thell. Native to southern Europe. Annual grassland. Occasional. [*Hrusa & Wagner 9120*]

**Erodium cicutarium* (L.) L'Her. Red-stemmed filaree. From Mediterranean region. Ruderal. Common. [*Hrusa & Wagner 9128*]

**Geranium dissectum* L. Cranesbill. From Europe. Ruderal. Common. [1608]

Haloragaceae

**Myriophyllum* sp. Water-milfoil. Open water. Uncommon. [*Hrusa & Wagner 9132*]

Myriophyllum cf. *sibiricum* V. Komarov. Water-milfoil. Growing in Railroad Slough. Uncommon. [1668]

Hippocastanaceae

Aesculus californica (Spach) Nutt. California buckeye. Valley oak riparian forest. Uncommon, one tree observed in park. [2057]

Hypericaceae

**Hypericum mutilum* L. Small-flowered Saint John's-wort. From e. N. America. Freshwater marsh. Uncommon. [*Hrusa & Wagner 9225*]

Juglandaceae

Juglans californica S. Watson var. *hindsii* Jepson. Northern California black walnut. Valley oak riparian forest. Occasional. [2051]

Lamiaceae

**Lamium amplexicaule* L. Henbit. From Europe. Ruderal. Annual grasslands. Uncommon. [*Hrusa & Wagner 9122*]

Lycopus americanus W. C. Barton. American bugleweed. Freshwater marsh. Common. [1649, 1680]

**Marrubium vulgare* L. Horehound. From Europe. Ruderal. Occasional. [1741]

Scutellaria lateriflora L. Blue skullcap. Freshwater marsh. Uncommon. [1648]

Stachys albens A. Gray. White hedge-nettle. Freshwater marsh. Uncommon. [1670]

Malvaceae

Hibiscus lasiocarpus Cav. Rose-mallow. Freshwater marsh. Endangered in California. Uncommon.

**Malva nicaeensis* All. Bull mallow. From Eurasia. Ruderal. Occasional. [1602]

**Malva parviflora* L. Cheeseweed. Native to Eurasia. Ruderal. Occasional. [1744]

Malvella leprosa (Ortega) Krapov. Alkali-mallow. Ruderal. Uncommon. [1727]

Moraceae

**Ficus carica* L. Edible fig. From Mediterranean area. Valley oak riparian forest. Uncommon. [2050]

**Morus alba* L. White mulberry. From China. Valley oak riparian forest. Uncommon.

Oleaceae

Fraxinus latifolia Benth. Oregon ash. Valley oak riparian forest. Occasional. [1627]

Onagraceae

Epilobium ciliatum Raf. ssp. *ciliatum*. Willow-herb. Freshwater marsh. Occasional. [1675]

Ludwigia peploides (Kunth) Raven ssp. *peploides*. Freshwater marsh and open water. Common. [1679]

Oxalidaceae

**Oxalis corniculata* L. Sorrel. From Europe. Growing on disturbed slough bank. Occasional.

Papaveraceae

Eschscholzia californica Cham. California poppy. Annual form, probably native to site. Ruderal. Occasional. [1635]

Plantaginaceae

**Plantago lanceolata* L. English plantain. From Europe. Annual grassland and ruderal. Common. [1597]

**Plantago major* L. Common plantain. Native to Europe. Annual grassland. Uncommon. [1659]

Platanaceae

Platanus racemosa Nutt. Western sycamore. Valley oak riparian forest. Uncommon. Only two western sycamores were observed in the park; they occur near the park boundary on the peninsula east of Railroad Slough and the old Southern Pacific right-of-way in the southern portion of the park.

Polygonaceae

- **Polygonum arenastrum* Boreau. Common knotweed. From Eurasia. Ruderal. Common. [1596]
Polygonum hydropiperoides Michaux. Waterpepper. Freshwater marsh. Common. [1671, 1709]
 **Rumex crispus* L. Curly dock. From Eurasia. Ruderal. Common. [1656, 1685]
 **Rumex pulcher* L. Fiddle dock. Native to Mediterranean region. Ruderal. Uncommon. [1640b]
Rumex salicifolius J. A. Weinm. var. *transitorius* (Rech. f.) J. Hickman. Willow dock. Valley oak riparian forest along water's edge. Uncommon. [1677]

Portulacaceae

- Calandrinia ciliata* (Ruiz Lopez & Pavon) DC. Red maids. Annual grassland just outside of park. Uncommon. [Hrusa & Wagner 9115]
Claytonia parviflora Hook. ssp. *parviflora* Miner's lettuce. Annual grassland just outside of park. Occasional. [Hrusa & Wagner 9119]

Primulaceae

- **Anagallis arvensis* L. Scarlet pimpernel. From Europe. Fallow agricultural field. Common. [1723]
Samolus parviflorus Raf. Water-pimpernel. Freshwater marsh. Uncommon. [1706]

Rosaceae

- Potentilla palustris* (L.) Scop. Marsh cinquefoil. Freshwater marsh. Uncommon. [1674]
 **Prunus* cf. *cerasifera* Ehrh. Cherry plum. From se Europe. Valley oak riparian forest. Uncommon. [2055]
Rosa californica Cham. & Schldl. Wild rose. Valley oak riparian forest. Common. [1613]
 **Rosa X hybrida* Hort. Forming a briar growing at water's edge east of the old railroad bed. Uncommon. [1629, 1662]

**Rubus discolor* Weihe & Nees. Himalayan blackberry. From Eurasia. Valley oak riparian forest. Abundant. [2049]

Rubus ursinus Cham. & Schldl. California blackberry. Valley oak riparian forest. Occasional. [1716]

Rubiaceae

Cephalanthus occidentalis L. var. *californicus* Benth. California button-willow. Freshwater marsh and willow scrub. Common. [1683]

Galium trifidum L. var. *pacificum* Wieg. Bedstraw. Freshwater marsh. Uncommon. [1682]

Salicaceae

Populus fremontii S. Watson ssp. *fremontii*. Fremont's cottonwood. Valley oak riparian forest. Common. [2056]

Salix exigua Nutt. Narrow-leaved willow. Valley oak riparian forest, willow scrub, and freshwater marsh. Common. [1645]

Salix gooddingii C. Ball. Goodding's black willow. Valley oak riparian forest. Common. [1611, 1719, 1724]

Salix laevigata Bebb. Red willow. Willow scrub. Uncommon. [1650]

Salix lasiolepis Benth. Arroyo willow. Valley oak riparian forest and willow scrub. Common. [1619, *Hrusa & Wagner 9109*]

Salix cf. lucida Muhlenb. ssp. *lasiandra* (Benth.) E. Murray. Red willow. Willow scrub. Uncommon. [*Hrusa & Wagner 9111*]

Saururaceae

Anemopsis californica (Nutt.) Hook. & Arn. Yerba manza. Valley oak riparian forest. Uncommon. [1653]

Scrophulariaceae

Mimulus guttatus DC. Common large monkey-flower. Freshwater marsh. Occasional. [1661, 1678]

Simaroubaceae

**Ailanthus altissima* (Miller) Swingle. Tree of heaven. Native to east Asia. Ruderal. Uncommon. [2057]

Solanaceae

**Solanum nigrum* L. Black nightshade. Native to Eurasia. Willow scrub on slough bank. Uncommon. [1710]

Ulmaceae

- **Ulmus pumila* L. Siberian elm. From central Asia. In habitat restoration area. Valley oak riparian forest/annual grassland ecotone. Uncommon. [1715]

Urticaceae

- Urtica dioica* L. ssp. *holosericea* (Nutt.) Thorne. Stinging nettle. Valley oak riparian forest. Occasional. [1660]

Verbenaceae

- **Phyla nodiflora* (L.) E. Greene var. *nodiflora*. Garden lippia. Valley oak riparian forest and ruderal. Native to S. America. Locally abundant. [1604, 1633, 1634]
- **Verbena bonariensis* L. Cluster-flowered verbena. Native to South America. Valley oak riparian forest along water's edge and freshwater marsh. Common. [1616, 1707]
- Verbena hastata* L. Blue vervain. Freshwater marsh. Common. [1681]

Viscaceae

- Phoradendron macrophyllum* (Engelm.) Cockerell. Big-leaf mistletoe. On cottonwoods. Valley oak riparian forest. Uncommon. [1728]

Vitaceae

- Vitis californica* Benth. California wild grape. Valley oak riparian forest. Common. [1630]
- **Vitis vinifera* L. Cultivated wine grape. From Europe. Adventive on boundary of park. Uncommon. [1620]

ANTHOPHYTA-MONOCOTYLEDONEAE

Alismataceae

- Sagittaria latifolia* Willd. Arrowhead. Freshwater marsh. Common. [1673, 1711, 1730]

Cyperaceae

- Carex barbarae* Dewey. Santa Barbara sedge. Valley oak riparian forest. Locally abundant. [1618]
- Carex comosa* Boott. Bristly sedge. Freshwater marsh. Uncommon. [1688]
- Carex praegracilis* W. Boott. Clustered field sedge. Valley oak riparian forest. Locally abundant. [1651]

- Carex* cf. *stipata* Muhlenb. var. *stipata*. Awl-fruited sedge. Freshwater marsh. Common. [1689, 1695]
Cyperus eragrostis Lam. Umbrella-sedge. Freshwater marsh. Occasional. [1615]
Cyperus strigosus L. False nutsedge. Freshwater marsh. Occasional. [1729]
Scirpus acutus Bigelow var. *occidentalis* (S. Watson) Beetle. Tule. Freshwater marsh. Abundant. [1690]

Hydrocharitaceae

- **Egeria densa* Planchon. Brazilian waterweed. Native to S. America. Freshwater marsh and open water. Locally abundant. [1667]

Juncaceae

- Juncus acuminatus* Michaux. Sharp-fruited rush. Freshwater marsh. Uncommon. [1694]
Juncus balticus Willd. Baltic rush. Freshwater marsh. Occasional. [1621]
Juncus effusus L. var. *effusus*. Bog rush. Freshwater marsh. Occasional. [1687, 1700]
Juncus xiphioides E. Meyer. Iris-leaved rush. Freshwater marsh. Occasional. [1686, 1697]

Lemnaceae

- Lemna* sp. Duckweed. Freshwater marsh and open water. Occasional. [1702]

Liliaceae

- **Asparagus officinalis* L. ssp. *officinalis*. Asparagus. From Europe. Ruderal. Uncommon. [1598]
Dichelostemma capitatum Alph. Wood. ssp. *capitatum*. Blue dicks. Annual grasslands. Uncommon. [Hrusa & Wagner 9121]

Poaceae

- **Agrostis gigantea* Roth. Giant bent grass. Native to Europe. Freshwater marsh. Uncommon. [1712]
**Agrostis stolonifera* L. Creeping bent grass. Native to Europe. Freshwater marsh. Uncommon. [1713a]
**Avena barbata* Brot. Slender wild oat. From Europe. Annual grassland and ruderal. Abundant. [1631]
**Avena fatua* L. Wild oat. From Europe. Ruderal. Common. [1605, 1739]
**Bromus catharticus* Vahl. Rescue grass. Native to South America.

- Annual grassland/valley oak riparian forest ecotone. Occasional. [1721]
- **Bromus diandrus* Roth. Ripgut. From Europe. Annual grassland and ruderal. Common.
- **Bromus hordeaceus* L. Soft chess. From Europe. Annual grassland and ruderal. Common. [Hrusa & Wagner 9118]
- **Cynodon dactylon* (L.) Pers. Bermuda grass. Native to Africa. Ruderal. Common. [2054]
- **Echinochloa crus-galli* (L.) P. Beauv. Barnyard grass. From Eurasia. Freshwater marsh. Occasional. [1731]
- **Festuca arundinacea* Schreber. Tall fescue. Native to Europe. Ruderal. Occasional. [1637]
- **Hordeum murinum* L. ssp. *leporinum* (Link) Archang. Wall barley. From Europe. Annual grassland and ruderal. Common. [1606]
- Leymus triticooides* (Buckley) Pilger. Alkali rye-grass. Valley oak riparian forest. Occasional. [1612, 1654]
- **Lolium perenne* L. Perennial ryegrass. From Europe. Ruderal. Common. [1603]
- **Paspalum dilatatum* Poir. Dallis grass. Native to South America. Valley oak riparian forest growing at water's edge. Common. [1617]
- **Phalaris arundinacea* L. Reed canary grass. From Eurasia. Ruderal. Locally abundant. [1692, 1699]
- **Phalaris aquatica* L. Harding grass. Native to Mediterranean Europe. Valley oak riparian forest. Occasional. [1623]
- **Poa annua* L. Annual bluegrass. Native to Europe. Ruderal. Occasional. [1737]
- **Polypogon interruptus* Kunth. Ditch beard grass. From S. America. Freshwater marsh. Occasional. [1713b]
- **Polypogon monspeliensis* (L.) Desf. Rabbit's-foot grass. From southern and western Europe. Freshwater marsh. Occasional. [1647]
- **Sorghum halepense* (L.) Pers. Johnson grass. Native to the Mediterranean. Fallow agricultural field. Common. [1626, 1722]
- **Vulpia myuros* (L.) C. Gmelin var. *hirsuta* (Hackel) Asch. & Graebner. Native to Europe. Ruderal. Occasional. [Hrusa & Wagner 9129]
- **Vulpia myuros* (L.) C. Gmelin var. *myuros*. Native to Europe. Annual grassland and ruderal. Common. [1745]

Pontederiaceae

- **Eichhornia crassipes* (C. Martius) Solms-Laubach. Water hyacinth. From tropical America. Freshwater marsh and open water. Locally abundant. [1693]

Potamogetonaceae

**Potamogeton crispus* L. Crispate-leaved pondweed. Native to Eurasia. Growing in Railroad Slough in open water. Uncommon. [1665]

Typhaceae

Sparganium erectum L. ssp. *stoloniferum* (Graebner) C. Cook & M. S. Nicholls. Bur-reed. Freshwater marsh. Uncommon. [1703]

Typha angustifolia L. Narrow-leaved cat-tail. Possibly naturalized in CA according to S. G. Smith (in Hickman 1993). Freshwater marsh. Occasional. [1691]

Typha latifolia L. Broad-leaved cat-tail. Freshwater marsh. Abundant. [1704]

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